

Bulletin of the Agricultural Chemical Society of Japan.

ABSTRACTS

from

TRANSACTIONS published in JAPANESE

(Pages refer to the Japanese originals of this volume unless otherwise noted.)

On the Acid Fermentation of *Aspergillus niger*. Part IV.

(pp. 1127~1130)

By Kinichiro SAKAGUCHI and Sinitiro BABA.

(Agricultural Chemical Laboratory, Tokyo Imperial University;

Received July 8, 1942.)

SUMMARY.

1. In the presence of methylene blue, remarkable quantities of aconitic acid have been accumulated in the metabolism solution of *Asp. niger*, which contained glucose as the sole source of carbon.

2. When the mixed solution of the sodium salts of aconitic and citric acids is fermented by *Asp. niger*, about 90% of the former added is converted to the latter, while the addition of 1/1000 mol of methylene blue to the solution inhibits the conversion completely.

3. Aconitic acid was also produced by *Asp. niger* in the mixed solution of the sodium salts of *d,l*-malic and acetic acids in the presence of methylene blue.

4. On the basis of the facts obtained it may be concluded that aconitic acid is the direct precursor of citric acid in the fermentation of glucose by *Asp. niger*, the former acid being probably synthesized from acetic acid and C_4 -dicarboxylic acid as malic acid.

Classification of Coli-aerogenes Group. (II)

(pp. 1131~1140)

By Y. TADA.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received March 3, 1942.)

Studies on Seed Disinfection. (Parts 1~2).

I. Influence of $C_1 \sim C_5$ Alkyl Mercuric Chlorides on the Germination of Unhulled Rice.

II. Disinfecting Action of $C_1 \sim C_5$ Alkyl Mercuric Chlorides on Certain Fungi and Bacteria.

(pp. 1141~1148)

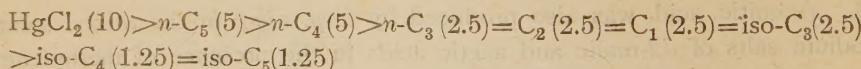
By Y. INOUYE and G. SHINTANI.

(Biochem. Lab., Dept. of Agriculture, Kyoto Imperial University;

Received July 23, 1942.)

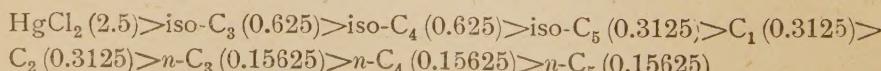
Although the disinfection of grain is now a well established principle of plant hygiene, little systematic investigation, especially on a relationship between fungicidal or bactericidal properties and chemical composition, is available in the literature.

In the present work, methyl, ethyl, propyl, butyl and amyl mercuric chlorides were synthesized by means of the addition of mercury halide to dialkyl mercury or by the reaction of mercury halide to Grignard's solution, and their fungicidal and bactericidal powers were tested by the technique which the authors elaborated for a laboratory testing of fungicidal or bactericidal value, effect on germination of seeds being investigated at the same time. Furthermore, they were compared to $HgCl_2$ solution of the same Hg concentration and also to formaldehyde solution. Isopropyl, isobutyl and isoamyl mercuric chlorides were also synthesized and were compared with their corresponding normal compounds. In conclusion, with regards to *Piricularia oryzae*, air dried unhulled rice being employed which was previously sprayed with water suspension of conidia of the fungi, the maximum safety concentration (dosis tolerata) for germination was observed in the following order:—



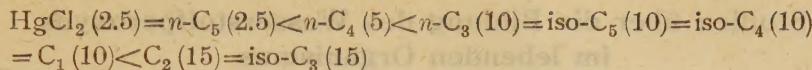
(The figures in brackets indicate Hg amount; mg per litre.)

The minimum fungicidal concentration (dosis curativa) for the germination of spores of *Ophiobolus miyabeanus* was also observed in the following approximate order:—



It is concluded that the higher alkyl compound in normal series as fungicide is highly valuable, and iso-compounds are generally inferior to the corresponding normal forms. And it is remarkable that the authors' results are contrary to Weston and Booer's view, according to which the lower alkyl radicals are the more valuable as fungicides.

The authors also performed tests on *Bacillus coli* and the minimum bactericidal concentration (dosis curativa) was observed as follows:—



From these results, it may be very interesting that HgCl_2 was shown as the most powerful bactericide, while, as fungicide, HgCl_2 is never superior to the organic mercury compounds.

Formaldehyde as fungicide for unhulled rice was proved to be useful only in the concentration of between 0.5 and 0.1%; in higher concentration germination may be spoiled and in lower concentration disinfection is not very effective.

Abnormal germination, as when colchicine is used, was also observed by using certain alkyl mercury halides as fungicide and their behaviours are now under investigation.

On the Seeds of "Sasa."

(pp. 1149~1152)

By Hisayosi IWATA and Mohatiro NAKAZIMA.

(Morioka Imperial College of Agriculture and Forestry; Received July 29, 1942.)

The seed grains of several species of "Sasa" contained about 12% of protein, 75% of carbohydrates, 56% of starch, 7% of pentosan and 4% of dextrin. The protein was composed of about 40% of insoluble, 25% of glutelin, 13% of prolamin, 8% of albumin and globulin, and 13% of non-protein forms.

On the Influence of Soil Acidity and Exchangeable Lime Contents for the Growth of Forest Trees. (Part II.)

(pp. 1153~1158)

By R. KAWASHIMA and G. SUYAMA.

(Agr. Chem. Laboratory, Kyushu Imp. University; Received July 8, 1942.)

On the Dehydrogenase Action in the Sliced Brain Tissue of the Rat. II.

(pp. 1159~1160)

By Tetutaro TADOKORO and Dizo HASHIMOTO.

(Hokkaido Imperial University; Received June 5, 1942.)

Studien über die Bildung des Wasserstoffperoxyds
im lebenden Organismus

(SS. 1161~1166)

Von K. YAMAFUJI, M. FUJII und F. YOSHIHARA.

(Aus dem Agrikulturchemischen Institut der Kaiserlichen Universität in Fukuoka;
Eingegangen am 4. 11. 1942.)

On the Studies of Diastare. II.

(pp. 1167~1171)

By Toyosaku MINAGAWA, Tetuiti KATAOKA, Sadatosi HAYAKAWA,
and Kenitiro FUKUNA.

(The Institute of Physical and Chemical Research;

Received June 26, 1942.)



Digitized by the Internet Archive
in 2024

